

against the half-nut cam-follower surface when the barrel cam is in the second position.

**28.** The syringe pump according to claim 7, wherein the half-nut housing includes a barrel cam void configured to be adjacent a barrel cam surface of the barrel cam so that the barrel cam freely rotates within the barrel cam void.

**29.** The syringe pump according to claim 7, further comprising a retaining finger pivotally coupled to a housing of the syringe pump, wherein the retaining finger is configured to rotate toward a syringe disposed within a syringe seat to retain the syringe.

**30.** The syringe pump according to claim 1, further comprising

a housing;

a syringe seat coupled to the housing, the syringe seat configured to retain a syringe having a barrel and a plunger disposed within the barrel;

a plunger head assembly coupled to the sliding block assembly and configured to drive the plunger of the syringe into the barrel of the syringe, the plunger head assembly having a force sensor operatively coupled to the plunger of the syringe to measure a force of the plunger head assembly on the plunger of the syringe; and

a processor operatively coupled to the motor and configured to control rotation of the motor to thereby control actuation of the plunger head assembly, the processor is also operatively coupled to the force sensor to receive a measured force therefrom, wherein the processor is configured to:

receive a target flow rate of the syringe loaded on the syringe pump;

determine a therapy actuation speed corresponding to the target flow rate;

command the motor to actuate the plunger of the syringe out of the barrel at a first predetermined speed until the force sensor coupled to the plunger measures a force that is less than a first predetermined force threshold or the plunger travels out of the barrel by a first predetermined distance;

command the motor to actuate the plunger of the syringe into the barrel at a second predetermined speed greater than the therapy actuation speed until the force sensor coupled to the plunger measures a force that exceeds a second predetermined threshold or the plunger travels into the barrel by a second predetermined distance; and

command the motor to actuate the plunger of the syringe into the barrel at the therapy actuation speed.

**31.** The syringe pump according to claim 30, wherein the therapy actuation speed corresponds to the target flow rate when there is no slack in the syringe pump or the syringe.

**32.** The syringe pump according to claim 30, wherein the processor is further configured issue an alarm if the plunger traveled into the barrel by the second predetermined distance without the force sensor measuring a force that exceeds the second predetermined threshold.

**33.** The syringe pump according to claim 30, further comprising a transceiver, wherein the processor is configured to communicate via the transceiver with a monitoring client.

**34.** A method of actuating a syringe pump, the method comprising:

rotating a lead screw with a motor;

monitoring the motor with an integral motor rotation sensor;

monitoring a rotary position sensor operatively coupled to at least one of the motor and the lead screw;

monitoring a position of a sliding block assembly using a linear position sensor;

cross-checking the integral motor rotation sensor, the rotary position sensor, and the linear position sensor between each other;

determining a discrepancy among the integral motor rotation sensor, the rotary position sensor, and the linear position sensor; and

continuing an infusion treatment by ignoring an inoperative one of the integral motor rotation sensor, the rotary position sensor, and the linear position sensor.

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